

Förderverein für Elektrotechnische Normung (FEN) e. V.
Cenelec Electronic Components Committee

CECC



Système Harmonisé d'Assurance de la Qualité des Composants Electroniques

SPECIFICATION PARTICULIERE:

CONNECTEURS COAXIAUX POUR FREQUENCE RADIOELECTRIQUE Série SMA

Harmonized System of Quality Assessment for Electronic Components

DETAIL SPECIFICATION:

RADIO FREQUENCY COAXIAL CONNECTORS Series SMA

Harmonisiertes Gütebestätigungssystem für Bauelemente der Elektronik

BAUARTSPEZIFIKATION:

HOCHFREQUENZ- KOAXIAL-STECKVERBINDER Serie SMA

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Edition
Issue
Ausgabe

CECC 22 111-815

1987

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PREFACE

This detail specification (DS) was prepared by CECC Working Group 22: 'RF Connectors'.

It relates to Series SMA connectors covered by sectional specification CECC 22 110 and by blank detail specification CECC 22 111. These in turn are related to the generic specification CECC 22 000.

It is based, wherever possible, on the Publications of the International Electrotechnical Commission, and in particular on IEC 169-15 (1979) Part 15: R.F. coaxial connectors with inner diameter of outer conductor 4,13 mm (0,163 in) with screw coupling - Characteristic impedance 50 ohms (Type SMA).

The text of this detail specification was circulated to members of CECC WG 22 and was approved for publication under the accelerated procedure for the acceptance of detail specifications in accordance with Decision 10 of CD Minutes document CECC(Secretariat)1838.

Document

WG22(Bosshard)801

Approval Date

August 1986

CECC 22 111-815 Issue 1



[1]	Page 1 of 6	[2] CECC 22 111 - 815
ELECTRONIC COMPONENT OF ASSESSED QUALITY IN ACCORDANCE WITH GENERIC SPECIFICATION 22 000 SECTIONAL SPECIFICATION 22 110	[3]	[4]

[5] DETAIL SPECIFICATION for
RADIO FREQUENCY COAXIAL CONNECTOR OF ASSESSED QUALITY :

SERIES

SMA

Style: .Straight plug for semi-rigid cable.....

Specials Features + Markings:

Method of cable/wire* attachment:

centre conductor - ~~solder/crimp~~ double contact

outer conductor - ~~solder~~/crimp or clamp

Mass: 3,5 g..... (Max.)

..without contact.....

..without insulator.....

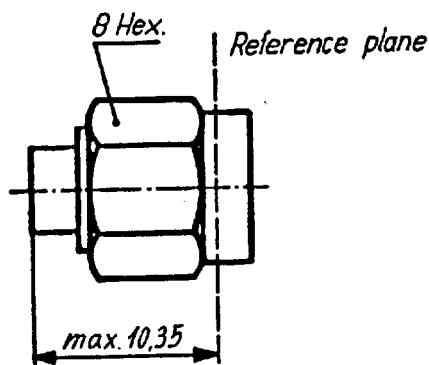
.....

Solderless connection to
semi-rigid cable

[6] Assessment level .. H .. Characteristic Impedance 50 Ω Climatic category: 55 / 115 / 21

[7] Outline and maximum dimensions

Panel piercing and mounting details



Assembly tools and stripping
dimensions to conform with the
instructions supplied by the
manufacturers

For mating interface and position of reference plane see CECC 22 110

Maximum panel thickness: for front mounting $\varnothing$ mm
for rear mounting $\varnothing$ mm

The outline dimensions meet the requirements of

[8] Variants

Variant No.	Description of Variant	IEC 96-2	Relevant Cables RG	National Cables
..01.....	Connector passivated .....	.....	RG. 402/U.....	..(F)..K5.2.....
.....	stainless steel.....	.....	.....	.....
.....				
.....				
.....				
.....				
.....				
.....				

Notes: 1. *Delete as appropriate

Information about manufacturers who have components qualified to this detail specification
is available in the current CECC 00 200: Qualified Products List.

[9] PERFORMANCE - (including limiting conditions of use)

RATINGS + CHARACTERISTICS		CECC 22 110 Clause	VALUE	REMARKS
ELECTRICAL				
	Variant No./ Designation			
*Reflection factor	-01	4.4.1	$\leq 0,034 + 0,004f$	Measurement freq. range $f = 2 - 18 \text{ GHz}$ ($VSWR \leq 1,07 + 0,009f$)
	-02			
	-03			
	-04			
	-05			
	-06			
				
Centre contact resistance	.....	4.4.2	na.....mΩ	Initial
Outer conductor continuity	.....	4.4.3	na.....mΩ	After conditioning
Insulation resistance	.....	4.4.4	na.....GΩ	Initial
	.....		na.....MΩ	After conditioning
+Proof voltage at sea level	-01	4.4.5	na.....kV	860 to 1060 mbar (86 to 106 kPa)
	-02			
	-03			
	-04			
	-05			
	-06			
				
+Proof voltage at 20 km altitude	-01	4.6.5	na.....V	44 mbar (4,4 kPa)
	-02			
	-03			
	-04			
	-05			
	-06			
				
+Working voltage at sea level	-01		na.....V	860 to 1060 mbar (86 to 106 kPa)
	-02			
	-03			
	-04			
	-05			
	-06			
				
+Working voltage at 20 km altitude	-01		na.....V	44 mbar (4,4 kPa)
	-02			
	-03			
	-04			
	-05			
	-06			
				
Screening effec- tiveness	-01	4.4.8	$z_t \leq 1,6 \times 10^{-3} \Omega$	Equivalent to 90. dB
	-02			
	-03			
	-04			
	-05			
	-06			
				
ADDITIONAL ELECTRICAL CHARACTERISTICS				

* f = Frequency in GHz

+ Voltage values are r.m.s values of a.c. at 50-60 Hz unless otherwise stated.

The connector insulator and centre contact are formed from the preparation of the semi-rigid cables. The performance is dependent upon the interface dimensions being correctly achieved after assembly.

RATINGS + CHARACTERISTICS	CECC 22 110 Clause	VALUE	REMARKS
MECHANICAL			
Contact captivation - axial force - torque	4.5.2	...na.....N ...na.....Nm	CECC 22 000 method (or as specified)
Engagement + separation - torque	4.5.4	...0,25.....Nm max.	
Effectiveness of clamping device against cable pulling	4.5.5 (1)	...267.....N	(to overcome friction of coupling nut)
Effectiveness of clamping device against cable torsion	4.5.5 (2)	...0,30.....Nm	
Tensile strength of coupling mechanism	4.5.6	...180.....N	
Coupling torque - normal - proof		...0,8 - 1,1.....Nm ...1,7.....Nm	
Bending moment	4.5.9	...na.....Nm	Relative to reference plane
ADDITIONAL MECHANICAL CHARACTERISTICS			
ENVIRONMENTAL			
Bump	4.6.2	...390.....m/s ² ...4'000.....bumps	(.40.g acceleration)
Vibration	4.6.3	...98.....m/s ² ...10...2'000.Hz	(.10.g acceleration)
Shock	4.6.4	...490.....m/s ² 1/2 Sine 11 ms	(.50.g acceleration)
Climatic category	4.6.5	...50./115./21.	
Sealing (panel + barrier sealed connectors)	4.6.8	...PA.....	100 to 110 kPa pressure differential (1000 to 1100 mbar)
Sealing (hermetically sealed connectors)	4.6.9	...PA.....	100 to 110 kPa pressure differential (1000 to 1100 mbar)
ADDITIONAL ENVIRONMENTAL CHARACTERISTICS			
ENDURANCE			
Mechanical	4.7.1	...500.....operat.	
High temperature	4.7.2	...1'000.....h at ...115.....°C	
ADDITIONAL ENDURANCE CHARACTERISTICS			

[10] Supplementary Information

- marking of the component : in accordance with 2.4 of CECC 22 000, in the following order of precedence :

i) Component identification	Variant No./ Designation	Identification
	-01	...22.111-815/01
	-02	.....
	-03	.....
	-04	.....
	-05	.....
	-06	.....
		
		
ii) Identity of manufacturer	.....	.....
iii) Manufacturing date code, year/week	.....	.....

- marking and contents of package : in accordance with 2.5 and 2.5.1 of CECC 22 000 as follows :

- i) Information prescribed in 2.4 of CECC 22 0000 detailed above
- ii) Nominal characteristic impedance 50 Ω
- iii) Assessment level code letter H.....
- iv) Any additional marking required

- ordering information : in accordance with 2.6 of CECC 22 000 as follows :

- i) Number of the detail specification CECC 22 111-815 -xx (No. of Variant)
- ii) Assessment level code letter H.....
- iii) Body finish (if more than one listed) see variant numbers in [8]
- iv) Any additional information or special requirements

- related documents :

CECC 22 000	Generic Specification for radio frequency connectors of assessed quality (and related documents, see 2.1 of CECC 22 000)
CECC 22 110	Sectional Specification for r.f. connectors Series SMA

- certified test records (RCE) : In accordance with 3.7 of CECC 22 000 (when applicable) (requirements to be included later)

- structural similarity : In accordance with 3.2 and 3.4 of CECC 22 000.

[11] TEST SCHEDULE AND INSPECTION REQUIREMENTS - SERIES SMA

Details of tests and quality assessment inspection requirements for levels H and U are given in 5.1 of CECC 22 110.

ACCEPTANCE TESTS

CECC 22 110 Clause	LEVEL H			
	Test Requir.	I.L.	AQL	Period
GROUP A1				
Visual examination	a	S 3	1,5 %	Lot by Lot
GROUP B1				
Outline dimensions	a	S 3	4 %	
Compatability mechanical	a	S 3	1,5 %	
Engagement + separation	a	S 3	1,5 %	
Gauge retention force (resilient contacts)	na			
Sealing (panel + barrier seal)	na			
Sealing (hermetic)	na			
Voltage proof	na			

PERIODIC TESTS

CECC 22 110 Clause	Test	I.L.	AQL	Period
GROUP C1 (d)				
Soldering	na			
Insulation resistance	na			

CECC 22 110 Clause	Test Requir.	Specimens (May be from C1)	Permitted Failures + per Group	Period
GROUP D1 (d)				
Mechanical tests on cable clamping device	a	3 mated pairs or sets min.	1	3 yearly
Bending moment	na			
Tensile strength of coupling mechanism	a			
GROUP D2 (d)				
Contact resistance	na	3 mated pairs or sets min.	1	3 yearly
Outer conductor continuity	a			
Bump	a			
Vibration	a			
Shock	a			
Damp heat, steady state	a			
Salt mist	a			
GROUP D3				
Dimensions and materials (piece parts)	a	1 set of piece parts each style	1	3 yearly
Mass	a			
GROUP D4 (d)				
Mechanical endurance	a	3 mated pairs or sets min.	1	3 yearly
High temperature endurance	a			
GROUP D5 (d)				
Reflection factor	a	3 mated pairs or sets min.	1	3 yearly
Screening effectiveness	a			
GROUP D6 (d)				
Contact captivation	na	3 mated pairs or sets min.	1	3 yearly
Rapid change of temperature	a			
Climatic sequence	a			

PROCEDURES

Quality Conformance Inspection

This shall consist of Test Groups A1 and B1 on a lot-by-lot basis and C1 on a periodic basis.

Qualification Approval and its Maintenance

This shall consist of three consecutive lots passing Test Groups A1 and B1 followed by selection of specimens from lots as appropriate. These specimens shall successfully pass the specified periodic C1 and D tests.

NOTES

I.L.	=	Inspection Level
AQL	=	Acceptable Quality Level
a	=	applicable
2	=	for Qualification Approval (QA) a total of 2 failures only permitted
(d)	=	destructive test - specimens shall not be returned to stock
na	=	not applicable